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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Seiichi P.T. Matsuda, et al.
Serial No.: 10/041,018
Date Filed: January 7, 2002
Group Art Unit: 1652
Examiner: Delia M. Ramirez
Title: *Diterpene-Producing Unicellular Organism*

Mail Stop Amendment
Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

I hereby certify that this correspondence is being deposited with the United States Postal Service as Express Mail No. EV352389964US addressed to: Mail Stop Amendment, Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the date shown below.

Jay Howard

Jay Howard
7/9/04

Date

Dear Sir or Madam:

INFORMATION DISCLOSURE STATEMENT

Applicants respectfully request, pursuant to 37 C.F.R. §§1.56, 1.97 and 1.98, that the references listed on the attached PTO-1449 form, be considered and cited in the examination of the above-identified application. Copies of the references are enclosed for the convenience of the Examiner. Furthermore, pursuant to 37 C.F.R. §§1.97(g) and (h), no representation is made that these references are material to the patentability of the present application.

Applicants believe no fees are due; however, the Commissioner is hereby authorized to charge any fees to Deposit Account No. 50-2148 of Baker Botts L.L.P. in order to effectuate this filing.

Respectfully submitted,

BAKER BOTTS L.L.P.
Attorneys for Applicants



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| PTO-1449 PATENT & TRADEMARK OFFICE Information Disclosure Citation in an Application | Application No. 10/041,018 | Applicant(s) Seiichi P.T. Matsuda, et al. | |
| | Docket Number 002376.0992 | Group Art Unit 1652 | Filing Date 1-07-2002 |

U.S. PATENT DOCUMENTS

| | | DOCUMENT NO. | DATE | NAME | CLASS | SUBCLASS | FILING DATE |
|----|---------|--------------|---------------------|------|-------|------------|-------------|
| A. | 4849410 | 07-18-1989 | R. Jacobs, et al. | 514 | 33 | 08-14-1987 | |
| B. | 5151352 | 09-29-1992 | H. Nakano, et al. | 435 | 123 | 09-30-1991 | |
| C. | 5189187 | 02-23-1993 | H. Nakano, et al. | 549 | 548 | 06-24-1992 | |
| D. | 5589581 | 12-31-1996 | N. Misawa, et al. | 536 | 23.2 | 03-10-1994 | |
| E. | 5602184 | 02-11-1997 | C. Myers, et al. | 514 | 739 | 03-03-1993 | |
| F. | 5637484 | 06-10-1997 | Y. Yukimune, et al. | 435 | 123 | 11-09-1994 | |
| G. | 5429939 | 07-04-1995 | N. Misawa, et al. | 435 | 67 | 10-23-1991 | |
| H. | 5473057 | 12-05-1995 | W. Fenical, et al. | 536 | 17.3 | 11-09-1994 | |
| I. | 5968789 | 10-19-1999 | Y. Yukimune, et al. | 435 | 123 | 02-28-1997 | |
| J. | 6235287 | 05-22-2001 | M. Weidner, et al. | 424 | 195.1 | 01-08-1999 | |

FOREIGN PATENT DOCUMENTS

| | | DOCUMENT NO. | DATE | COUNTRY | CLASS | SUBCLASS | TRANSLATION | |
|----|--|--------------|------|---------|-------|----------|-------------|----|
| | | | | | | | YES | NO |
| K. | | | | | | | | |

NON-PATENT DOCUMENTS

| | DOCUMENT (Including Author, Title, Source, and Pertinent Pages) | DATE |
|----|--|------------|
| L. | Albrecht, M., et al., <i>Synthesis of atypical cyclic and acyclic hydroxy carotenoids in Escherichia coli transformants</i> , Journal of Biotechnology 58 (1997) 177-185. | 09-22-1997 |
| M. | Bailey, James E., <i>Toward a Science of Metabolic Engineering</i> , Science, New Series, Volume 252, Issue 5013, 1668-1675. | 06-21-1991 |
| N. | Basson, Michael E., et al., <i>Identifying Mutations in Duplicated Functions in Saccharomyces cerevisiae: Recessive Mutations in HMG-CoA Reductase Genes</i> , Genetics, 117, 645-655. | 12-1987 |
| O. | Basson, Michael E, <i>Saccharomyces cerevisiae</i> contains two functional genes encoding 3-hydroxy-3-methylglutaryl-coenzyme A reductase, Proc. Natl. Acad. Sci. USA 83: 5563-57. | 1986 |
| P. | Corey, E.J., et al., <i>Isolation of an Arabidopsis thaliana gene encoding cycloartenol synthase by functional expression in a yeast mutant lacking lanosterol synthase by the use of a chromatographic screen</i> , Proc. Natl. Acad. Sci USA Vol. 90, pp. 11628-11632. | 12-1993 |
| Q. | Crowley, James H., et al., <i>A Mutation in a Purported Regulatory Gene Affects Control of Sterol Uptake in Saccharomyces cerevisiae</i> , Journal of Bacteriology, Vol 180, No. 16, p. 4177-4183. | 08-1998 |
| R. | Funk, Christoph, et al., <i>Diterpenoid Resin Acis Biosynthesis in Conifers: Characterization of Two Cytochrome P450-Dependent Monooxygenases and an Aldehyde Dehydrogenase Involved in Abietic Acid Biosynthesis</i> , Archives of Biochemistry and Biophysics, Vol. 308, No. 1, pp. 258-266. | 01-1994 |
| S. | Hara, Mitsunobu, et al., <i>Leinamycin, A New Antitumor Antibiotic From Streptomyces, Producing Organism, Fermentation and Isolation</i> , The Journal of Antibiotics, pp. 1768-1774. | 12-1989 |
| T. | Hezari, Mehri, et al., <i>Purification and Characterization of Taxa-4(5), 11(12)-diene Synthase from Pacific Yew (Taxus brevifolia) that Catalyzes the First Committed Step of Taxol Biosynthesis</i> , Archives of Biochemistry and Biophysics, Vol. 322, No. 2, pp. 437-444. | 10-01-1995 |
| U. | Jiang, Yu, et al., <i>BTS1 Encodes a Geranylgeranyl Diphosphate Synthase in Saccharomyces cerevisiae</i> , The Journal of Biological Chemistry, Vol. 270, No. 37, pp. 21793-21799. | 09-15-1995 |

| EXAMINER | DATE CONSIDERED |
|----------|-----------------|
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| A. | | | | | | |

FOREIGN PATENT DOCUMENTS

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| B. | | | | | | |

NON-PATENT DOCUMENTS

| | DOCUMENT (Including Author, Title, Source, and Pertinent Pages) | DATE |
|-----------|--|------------|
| C. | Kajiwara, Susumu, et al., <i>Expression of an exogenous isopentenyl diphosphate isomerase gene enhances isoprenoid biosynthesis in Escherichia coli</i> , Biochem J., 324(Pt 2): 421-6. | 06-01-1997 |
| D. | Kholodenko, Boris N., et al., <i>Metabolic Design: How to Engineer a Living Cell to Desired Metabolite Concentrations and Fluxes</i> , Biotechnol Bioeng., 59(2):239-247. | 07-20-1998 |
| E. | LaFever, Roy E., et al., <i>Diterpenoid Resin Acids Biosynthesis in Conifers: Enzymatic Cyclization of Geranylgeranyl Pyrophosphate to Abietadiene, the Precursor of Abietic Acid</i> , Archives of Biochemistry and Biophysics, Vol. 313. No. 1, pp. 139-149, 1994. | 08-15-1994 |
| F. | Leak, Frank W., et al., <i>In Yeast, upc2-1 Confers a Decrease in Tolerance to LiCl and NaCl, Which Can Be Suppressed by the P-Type ATPase Encoded by ENA2</i> , DNA and Cell Biology, Vol. 18, No. 2, 1999 pp. 133-139. | 1999 |
| G. | Learned, R. Marc, et al., <i>3-Hydroxy-3-methylglutaryl-coenzyme A reductase from Arabidopsis thaliana is structurally distinct from the yeast and animal enzymes</i> , Proc. Natl. Acad. Sci. USA Vol. 86, pp. 2779-2783. | 04-1989 |
| H. | Lewis, T.L., et al., <i>Pleiotropic Mutations in Saccharomyces cerevisiae Affecting Sterol Uptake and Metabolism</i> , Yeast 4(2):93-106. | 1988 |
| I. | Liu, Shuang-Jiang, et al., <i>A Novel Genetically Engineered Pathway for Synthesis of Poly (Hydroxyalkanoic Acids) in Escherichia Coli</i> , Applied and Environmental Microbiology, Vol. 66. No. 2, p. 739-743. | 02-2000 |
| J. | Misawa, Norihiko, et al., <i>Production of B-Carotene in Zymomonas mobilis and Agrobacterium tumefaciens by Introduction of the Biosynthesis Genes from Erwinia uredovora</i> , Applied and Environmental Microbiology, Vol. 57, No. 6, p. 1847-1849. | 06-1991 |
| K. | Misawa, Norihiko, et al., <i>Metabolic engineering for the production of carotenoids in non-carotenogenic bacteria and yeasts</i> , Journal of Biotechnology 59 (1998) 169-181. | 1998 |
| L. | Misawa, Norihiko, et al., <i>Expression of a Tomato cDNA Coding for Phytoene Synthase in Escherichia coli, Phytoene Formation In Vivo and In Vitro, and Functional Analysis of the Various Truncated Gene Products</i> , J. Biochem, 116, 980-985 (1994). | 1994 |
| M. | Miura, Yutaka, et al., <i>Production of Lycopene by the Food Yeast, Candida utilis That Does Not Naturally Synthesize Carotenoid</i> , Biotechnol Bioeng., 58(2-3): 306-8. | 04-20-1998 |
| N. | Miura, Yutaka, et al., <i>Production of the Carotenoids Lycopene, B-Carotene, and Astaxanthin in the Food Yeast Candida utilis</i> , Applied and Environmental Microbiology, Vol. 64, No. 4, p. 1226-1229. | 04-1998 |
| O. | Ness, Frederique, et al., <i>SUT1 is a putative Zn^{II}/2Cys6-transcription factor whose upregulation enhances both sterol uptake and synthesis in aerobically growing Saccharomyces cerevisiae cells</i> , Eur. J. Biochem. 268, 1585-1595. | 02-2001 |
| P. | Parks, Leo W., et al., <i>Physiological Implications of Sterol Biosynthesis in Yeast</i> , Annu. Rev. Microbiol. 49:95-116. | 1995 |
| Q. | Parks, Leo W., et al., <i>Biochemical and Physiological Effects of Sterol Alterations in Yeast-A Review</i> , Lipids Vol. 30 No. 3:227-230. | 1995 |
| R. | Peters, Reuben J., et al., <i>Abietadiene Synthase from Grand Fir (Abies grandis) Characterization and Mechanism of Action of the "Pseudomature" Recombinant Enzyme</i> , Biochemistry 39: 15592-15602. | 12-2000 |
| S. | Polakowski, T., et al., <i>Overexpression of a cytosolic hydroxymethylglutaryl-CoA reductase leads to squalene accumulation in yeast</i> , Appl Microbiol Biotechnol, 49:66-71. | 1998 |
| T. | Ravn, Matthew M., et al., <i>Stereochemistry of the Cyclization-Rearrangement of (+)-Copalyl Diphosphate to (-)-Abietadiene Catalyzed by Recombinant Abietadiene Synthase from Abies grandis</i> , Org. Letters Vo. 2, No. 5, P. 573-576 | 03-2000 |
| U. | Shimada, Hiroshi, et al., <i>Increased Carotenoid Production by the Food Yeast Candida utilis through Metabolic Engineering of the Isoprenoid Pathway</i> , App. and Environ. Microbiology, Vol. 64, No. 7, p. 2676-2680. | 07-1998 |

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|----------|-----------------|
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| B. | | | | | | | |
| NON-PATENT DOCUMENTS | | | | | | | |
| | | DOCUMENT (Including Author, Title, Source, and Pertinent Pages) | | | | | DATE |
| C. | | Stephanopoulos, G., <i>Bioinformatics and Metabolic Engineering</i> , Metabolic Engineering 2(3): 157-158. | | | | | 2000 |
| D. | | <i>Stofer Vogel, Brigitte, et al., Abietadiene Synthase from Grand Fir (Abies grandis) cDNA Isolation, Characterization and Bacterial Expression of a Bifunctional Diterpene Cyclase Involved in Resin Acid Biosynthesis</i> , J Biological Chemistry, Vol. 271, No. 38: 23262-23268. | | | | | 09-20-1996 |
| E. | | <i>Trapp, Susan C., et al., Genomic Organization of Plant Terpene Synthases and Molecular Evolutionary Implications</i> , Genetics, 158(2):811-832. | | | | | 06-2001 |
| F. | | <i>Wang, Chia-Wei, et al., Engineered Isoprenoid Pathway Enhances Astaxanthin Production in Escherichia coli</i> , Biotech and Bioeng, Vol. 62, No. 2, 235-241. | | | | | 01-20-1999 |
| G. | | <i>Wildung, Mark R., et al., A cDNA Clone for Taxadiene Synthase, the Diterpene Cyclase That Catalyzes the Committed Step of Taxol Biosynthesis</i> , J. of Biological Chem., Vo. 271, No. 16: 9201-9204. | | | | | 04-19-1996 |
| H. | | <i>Yamano, Shigeyuki, et al., Metabolic Engineering for Production of B-Carotene and Lycopene in Saccharomyces cerevisiae</i> , Biosci. Biotech. Biochem., 58(6): 1112-1114. | | | | | 1994 |
| I. | | | | | | | |
| J. | | | | | | | |
| K. | | | | | | | |
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